

AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Figure 11.

Figure 11 has been amended to include the legend "BACKGROUND ART" in order to adequately address the Examiner's objection to the drawing.

REMARKS

Claims 1-16 are currently pending in the application, with claims 1 and 8 being independent. Applicants request the Examiner to reconsider the rejections set forth in the Office Action in light of the following remarks and claim amendments, and earnestly seek timely allowance of the pending claims.

Allowable Subject Matter

The Examiner indicated that claims 4, 5, 12 and 13 would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 112, second paragraph, and include all of the limitations of the base claim and any intervening claims. Applicants appreciate the Examiner's indication of allowable subject matter.

Drawings

The Office Action indicated that Figure 11 should be designated by a legend such as "Prior Art" because it was alleged only that which is old is illustrated. Applicants have amended Figure 11 with the addition of the label "BACKGROUND ART" in order to address the Examiner's objection. Applicants submit that the replacement sheet contained herein is in full compliance with M.P.E.P. § 608.02(g) and 37 C.F.R. § 1.121(d), and respectfully request the Examiner withdraw the objection to Figure 11.

Claim Rejections – 35 U.S.C. § 112

The Office Action indicated that claims 1-16 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Specifically, regarding claim 1, the Examiner indicated that the claim feature “common” is indefinite; additionally, the Examiner also indicated that the term “roughly” is a relative term and also indefinite; finally, the Examiner indicated that the feature “to each other” should be deleted.

Applicants have amended claim 1 to better define the present invention and address the § 112, second paragraph rejection.

Regarding claim 3, the Examiner asserted that the feature “said other capacitor” lacks antecedent basis. Applicants respectfully disagree with the Examiner in this regard. Applicants submit that in claim 2, the feature “another capacitor” provides antecedent basis for the term “other capacitor.” Accordingly, one of ordinary skill in the art would be able to ascertain the metes and bounds of claim 3 in light of the specification. Applicants therefore respectfully request the Examiner to withdraw the § 112, second paragraph rejection to claim 3.

Regarding claim 8, the Examiner asserted that “roughly” is a relative term and “to each other” should be deleted. Applicants have amended claim 8 to better define the claimed invention and address the § 112, second paragraph rejection. Applicants respectfully request the Examiner withdraw the rejection of claim 8.

Finally, the Examiner asserted that claims 1 and 8 are incomplete “since they fail to describe a plurality of transmission lines formed two parallel line segment patterns and each parallel line segment having a plurality of series or parallel resonant circuits

which is essential to the applicant's invention" (Office Action, page 3, lines 10-13). Applicants strongly disagree with the Examiner's characterization as to what is essential to the invention, and respectfully remind the Examiner it is improper to read limitations from the specification into the claims. The claims define the present invention and are read in light of the specification. Applicants' traverse the Examiner's assertion that claims 1 and 8 are incomplete and, moreover, disagree with the Examiner's characterization of the invention which is used to support this rejection. Accordingly, Applicants respectfully request the Examiner withdraw the § 112, second paragraph, rejections of claims 1 and 8.

Claim Rejections – 35 U.S.C. § 102

Claims 8, 9, 11, 14 and 15 are rejected under 35 U.S.C. § 102(a) as being anticipated by the article "Dielectric Resonator Elliptic-Function Band Rejection Filter With External Coupling Waveguide," by Uchida et al. ("Uchida"). Applicants submit the Examiner has failed to establish a *prima facie* case of anticipation and traverse this rejection.

Uchida discloses a band rejection filter which can obtain large attenuations over a finite frequency band with a smaller number of stages, smaller in-band loss, and smaller group-delay variation than conventional band-pass filters. Specifically, Uchida discloses a dielectric resonator band reject filter whose parameters may be calculated from the equivalent circuits shown in Figure 2. Specifically, Figure 2 shows two branches of a circuit, wherein one portion of the branch shows a series connection of a

one-quarter or three-quarter wavelength waveguide section connected in series to a resonator circuit which consists of a capacitor and an inductor configured in parallel, and the resonator circuit connected in series with another one-quarter or three-quarter wavelength waveguide section. Each branch is connected by a series configuration of a J-inverter connected in series with a waveguide section and the waveguide section in turn connected to another J-inverter. (See Section II, pages 183 and 184; Figures 2 and 3.)

Conversely, Uchida fails to disclose, at least, "a plurality of parallel resonant circuits each connected through separate transmission lines ... and a jump coupling circuit for coupling two non-adjacent parallel resonant circuits, belonging to the plurality of parallel resonant circuits, to each other," as recited in claim 8. Uchida is distinguished by the features recited above in claim 8 in that Uchida discloses a more complex circuit for each branch of the parallel circuit, as shown in Figure 2. Specifically, each branch shown in Figure 2 discloses a series connection of two waveguide sections with a parallel LC circuit interposed between them. Accordingly, Applicants respectfully request the Examiner withdraw the rejection of claim 8.

Claims 9, 11, 14 and 15 depend from claim 8 and are allowable at least by virtue of their dependency to allowable claim 8.

The Examiner rejected claims 1, 2 and 6 under 35 U.S.C. § 102(a) as being anticipated by the article "Ku-Band Elliptic-Function Band-Rejection Filter with Dielectric Resonators," by Uchida et al. ("Uchida 2 et al."). Applicants respectfully traverse this rejection. Uchida 2 et al. disclose a Ku elliptic-function band-rejection filter with a

dielectric resonator and a structure for the realization thereof in Figure 1. Figure 2 shows an equivalent circuit of the filter. As can be seen with the equivalent circuit shown in Figure 2, two parallel branches are disclosed with each branch having an inductor and capacitor connected in series which is in parallel with a J12 component. The inductor/capacitor components are also connected in parallel to a negative J-inverter, which in turn is connected in parallel to another series inductor/capacitor configuration in a parallel branch.

Conversely, Uchida 2 et al. fails to disclose, at least, "a plurality of series resonant circuits with one set of end terminals having a common connection and another set of end terminals, each connected through separate transmission lines each having a length that is an odd multiple of about one-quarter wavelength corresponding to a resonance frequency of the plurality of series resonant circuits," as recited in claim 1.

Uchida et al. are clearly distinguished by the features recited above in claim 1 in that a different circuit configuration is disclosed for the equivalent circuit of the Ku-band elliptic-function band-rejection filter.

Accordingly, Applicants respectfully request the Examiner to withdraw the rejections to claim 1. Claims 2 and 6 depend from claim 1 and are allowable at least by virtue of their dependency from allowable claim 1.

The Examiner rejected claims 8-10, 15 and 16 under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent No. 4,477,785 to Atia ("Atia"). Applicants respectfully traverse this rejection.

Atia merely discloses a generalized dielectric resonator filter for the realization of most general transfer function characteristics of bank-pass filters using cylindrical dielectric resonator discs in a microstrip transmission line configuration. (See Abstract.) Specifically, Atia discloses a dielectric resonator filter structure that is capable of realizing most general band-pass transfer functions, namely, transfer functions that possess finite transmission zeros. This is achieved by providing a canonical form filter where resonators are coupled serially by one-quarter wavelength couplings, while physically adjacent not electrically non-adjacent resonators are coupled by a mixture of one-quarter or three-quarter wavelength shunt couplings (column 2, lines 58-69). Atia further discloses a series of circular cylindrical dielectric resonators 40-54, numbering $2n$. From input to output, the resonators are serially connected by means of a positive series coupling 70 comprised of microstrip lines of length equal to one-quarter wavelength (column 3, lines 10-20; Figures 2 and 2a). Additionally, Atia discloses in Figure 6a an equivalent circuit of the microstrip coupled dielectric resonators. From this Figure, it can be seen that the resonators are comprises of a series capacitive inductive configuration.

Conversely, Atia fails to disclose, at least, "a plurality of parallel resonant circuits each connected through separate transmission lines having a length that is an odd multiple of about one-quarter wavelength corresponding to a resonance frequency of the plurality of parallel resonant circuits," as recited in claim 8.

Atia is clearly distinguished by the above-recited features in that the equivalent circuits for the microstrip resonators have differing equivalent circuits.

Claims 9, 10, 15 and 16 depend from claim 8 and are allowable at least by virtue of their dependency from allowable claim 8.

Claim Rejections – 35 U.S.C. § 103

Claims 8, 9, 11, 14 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the article “Ku-Band Elliptic-Function Band-Rejection Filter with Dielectric Resonators,” to Uchida et al. (“Uchida et al.”). Applicants respectfully traverse this rejection.

In this rejection, the Examiner applies Uchida et al. as applied previously in the § 102 rejection and further asserts, “It is unclear as to whether each dielectric resonator being a parallel resonant circuit.” (See Office Action, page 5, paragraph 5.) The Examiner further asserts “using a dielectric resonator as a parallel resonant circuit is considered as an obvious modification since such design technique is well known in the art.” (See Office Action, page 5, paragraph 5.)

Applicants assert that the Examiner has failed to establish a *prima facie* case of obviousness in that the Examiner has failed to set forth a combination of references which teach all of the features recited in claim 8. In order to cure the deficiencies of the cited reference, the Examiner appears to be taking Official Notice. The Examiner is respectfully reminded that an Official Notice rejection is improper unless the facts asserted are well known or common knowledge in the art, and capable of instant and unquestionable demonstration as being well known. It is never appropriate to rely solely on “common knowledge” without evidentiary support in the record as the principal

evidence upon which a rejection is based. Accordingly, Applicants traverse the Official Notice and requests that the Examiner either cite a competent prior art reference, if any exists, in substantiation of these conclusions, supply a personal affidavit supporting the Examiner's allegation, or else withdraw the rejection.

Claims 1-3, 6-10, 15 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over the article "Microstrip Filters for RF/Microwave Applications," to Hong et al. ("Hong") in view of U. S. Patent No. 5,896,073 to Miyazaki et al. ("Miyazaki"). Applicants respectfully traverse this rejection.

Hong merely teaches various configurations for TEM or quasi-TEM narrow-band bandstop filters. Hong further discloses two different types of equivalent circuits, one having shunt series resonant branches and the other having parallel resonant branches (see Figure 6.7).

However, Hong fails to teach or suggest, at least, "a plurality of series resonant circuits with one set of end terminals having a common connection and another set of end terminals, each connected through separate transmission lines," as recited in claim 1 or "a plurality of parallel resonant circuits each connected through separate transmission lines ... and a jump-coupling circuit for coupling two non-adjacent parallel resonant circuits, belonging to the plurality of parallel resonant circuits, to each other," as recited in claim 8.

Miyazaki fails to cure the deficiencies of Hong in this respect. Miyazaki merely teaches a high-frequency filter which can form a desired pole in a passing characteristic and can be easily assembled where the resonators and the jumping coupling means in

a filter are formed on the same dielectric plate (column 4, lines 7-15). Specifically, Miyazaki teaches that reference numerals 10a to 10d denote strip conductors, each of a conducting film formed in intimate contact with the other surface of the dielectric plate 8a. The strip conductors are arranged substantially in parallel as seen from the pattern shown in Figure 22 (column 16, lines 17-21).

Hong and Miyazaki, either singly or in combination, fail to teach or recite at least the above-quoted features as recited in claims 1 and 8. Accordingly, Applicants respectfully request the Examiner to withdraw the rejections of claims 1 and 8. Claims 2, 3, 6 and 7 depend from claim 1 and are allowable at least by virtue of their dependency from claim 1; and claims 9, 10, 15 and 16 depend from claim 8 and are allowable at least by virtue of their dependency from allowable claim 8.

Conclusion

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (703) 205-8000 in the Washington, D.C. area.

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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

Michael K. Mutter

Registration No.: 29,680

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Rd

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

Attachment: Replacement Sheet (Figure 11)